



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/258,600	02/26/1999	Dana M. Fowlkes	CPI-012CP4DV	4086

7590 04/20/2004

Peter C. Lauro, Esq.  
Lahive & Cockfield, LLP  
28 State Street  
Boston, MA 02109

EXAMINER
----------

LAMBERTSON, DAVID A

ART UNIT	PAPER NUMBER
----------	--------------

1636

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

8/12

<b>Office Action Summary</b>	<b>Application No.</b> 09/258,600	<b>Applicant(s)</b> FOWLKES ET AL.	
	<b>Examiner</b> David A. Lambertson	<b>Art Unit</b> 1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 44-102 and 109 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 67, 68, 94, 95, 98 and 99 is/are allowed.
- 6) ☒ Claim(s) 44-52, 54-66, 69-93, 96, 97, 100, 101 and 109 is/are rejected.
- 7) ☒ Claim(s) 53 and 102 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Receipt is acknowledged of a reply to the previous Office Action, filed March 24, 2004.

Amendments were made to the claims.

Claims 44-102 and 109 are pending and under consideration in the instant application.

Any rejection of record in the previous Office Action, mailed January 28, 2004, that is not addressed in this action has been withdrawn.

Finality of the previous Office Action is withdrawn because the Office did not make all of the necessary rejections of record in the previous Office Action. These rejections are now set forth in the following Non-Final Office Action.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 63-66 and 85-93 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. **This is a new rejection that is not necessitated by amendment.**

Claims 63-66 and 85-93 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to recite a positive process step that refers back to the preamble of the claim. In order for the claimed method to be definite in terms of the metes and bounds of the invention, the claim must recite a method step that provides for the result of the methods as claimed. Otherwise, the claim is open-ended, thereby lacking boundaries. It would be remedial to recite a

Art Unit: 1636

method step that simply recapitulates what is stated in the preamble of the claim. For example, in claim 63, it would be remedial to indicate "thereby assaying a peptide for modulation of the activity of a non-yeast surrogate for a pheromone system" at the end of the claim in order to indicate the performance to the final step in the method.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following rejection is predicated on the definition of the terms "agonist" and "antagonist" as set forth in the instant specification, and their relationship to the term "modulator" as set forth in the '042 patent. Specifically, a modulator (as defined by the '042 patent) includes both "activators" and "inhibitors" (see for example column 14, lines 58-59), which can also be referred to as agonists (see for example column 14, lines 45-48) or antagonists (see for example column 14, lines 56-57). Therefore, a compound that modulates an interaction can be classified as either an agonist or antagonist, depending on the nature of the modulation.

Claims 44-46, 48-52, 54-66, 69-93, 96, 97, 100 and 109 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2, 3, 6-

Art Unit: 1636

8, 11-15, 17-21, 47 and 48 of U.S. Patent No. 6,100,042 (henceforth the '042 patent; cited in a previous Office Action). **This is a new rejection that is not necessitated by amendment.**

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

1. With regard to claims directed to yeast cells, claims 2, 20, 47 and 48 of the '042 patent each claims a yeast host cell that comprises at least a surrogate pheromone (i.e., a G-coupled) receptor, and a heterologous peptide that can act to modulate the activity of the receptor (e.g., an agonist or antagonist). Thus, although claims 2, 20, 47 and 48 do not specifically recite the terms "agonist" and "antagonist" it would be obvious to use an agonist or antagonist in those claims based upon the definition of a "modulator" set forth in the '042 patent. As such, claims 100, 44, 45, 96 and 97 are obvious in light of these claims in the '042 patent. (Note: claims 96 and 97 are obvious because there are two types of *S. cerevisiae* ( $\alpha$ -type and a-type), one of which expresses Ste3p and is responsive to a-factor, and it would be obvious to use either one of these types of cells when making the cells claimed in the '042 patent). These claims also make claim 109 of the instant application obvious because, while the claims do not put a specific size limit on the size of the heterologous peptide, it broadly includes any size peptide. One of skill in the art would consult the specification for preferred heterologous peptides to use in the claimed host cells, and would determine that a peptide of 2 to 200 amino acids in length would be appropriate because it is set forth as a preferred embodiment in the specification (see for example page 45, lines 44-45). This provides adequate motivation to use a 2 to 200 amino acid long peptide in the claimed cells of the '042 patent.

Art Unit: 1636

2. The remaining dependent claims of the instant specification set forth in the rejection above (concerning the claimed host cells) all comprise limitations that are present in corresponding claims of the '042 patent. Thus, these claims are also obvious because they all depend from a claim that is obvious in view of a claim in the '042 patent. The corresponding claims are set forth below:

(a) Claims 11 and 21 of the '042 patent make instant claim 46 obvious because they recite that the yeast host cell further comprise a chimeric  $G\alpha$  subunit;

(b) Claim 4 of the '042 patent makes instant claim 48 obvious because it further indicates that the cells no longer produce a functional endogenous pheromone system protein (e.g., the receptor);

(c) Claim 17 of the '042 patent makes instant claims 49-51 obvious because it teaches using an  $\alpha$ -factor or a-factor leader peptide on the heterologous peptide, thereby necessitating its targeting to the periplasmic space;

(d) Claim 6 of the '042 patent makes obvious instant claim 52 because it indicates the lack of a functional wildtype pheromone in the cell;

(e) Claim 3 of the '042 patent makes obvious instant claim 54 because it indicates the use of cells where the desensitization of the pheromone pathway is slower;

(f) Claim 8 of the '042 patent makes obvious instant claim 55 because it indicates that a functional SST2 is not present in the cells;

(g) Claim 7 of the '042 patent makes obvious instant claim 56 because it indicates that a functional FAR1 is not present in the cells;

Art Unit: 1636

(h) Claim 12 of the '042 patent makes obvious instant claim 57 because it indicates the use of a selectable marker/gene that is activated by the pheromone system;

(i) Claim 13 of the '042 patent makes obvious instant claim 58 because it indicates the use of a pheromone responsive promoter/operator element to express the selectable marker/gene;

(j) Claim 15 of the '042 patent makes obvious instant claim 59 because it indicates the use HIIS3 as the selectable marker/gene;

(k) Claim 14 of the '042 patent makes obvious instant claim 60 because it indicates the use of the FUS1 promoter element;

(l) Claim 18 of the '042 patent makes obvious instant claim 61 because it indicates the use of *S. cerevisiae* cells; and

(m) Claim 19 of the '042 patent makes obvious claims 62 and 69-84 because it indicates the use of a library of peptides in the cells. It is noted that the limitations of claim 19 must also be combined with limitations set forth in the above mentioned claims in order to make obvious all of the claims indicated from the instant specification. However, the skilled artisan would be motivated to combine these limitations in order to provide the cells necessary to practice the method of identifying modulators of heterologous receptors that is also claimed in the '042 patent.

3. With regard to claims directed to methods of using the yeast cells to identify modulators, claims 43 and 25 of the '042 patent disclose methods of using the aforementioned yeast cells to identify heterologous peptides that can modulate the activity of the surrogate receptor, and therefore make obvious claims 63 and 85 of the instant application.

Art Unit: 1636

4. The remaining dependent claims of the instant specification set forth in the rejection above (concerning the methods) all comprise limitations that are present in corresponding claims of the '042 patent. Thus, these claims are also obvious because they all depend from a claim that is obvious in view of a claim in the '042 patent. The corresponding claims are set forth below:

(a) Claims 35 and 45 of the '042 patent make obvious claims 64 and 65 of the instant application because they set forth the use of a pheromone responsive selectable marker for use in the claimed method;

(b) Claim 42 of the '042 patent makes obvious claim 66 of the instant application because it sets forth the screening of a peptide library for modulators;

(c) Claim 27 of the '042 patent makes obvious claim 86 of the instant application because it further indicates that the cells no longer produce a functional endogenous pheromone system protein (e.g., the receptor);

(d) Claim 40 of the '042 patent makes obvious claim 87 of the instant application because it teaches using an  $\alpha$ -factor or a-factor leader peptide on the heterologous peptide, thereby necessitating its targeting to the periplasmic space;

(e) Claim 36 of the '042 patent makes obvious claims 88 and 89 of the instant application because it indicates the use of a pheromone responsive promoter/operator element to express the selectable marker/gene;

(f) Claim 38 of the '042 patent makes obvious instant claim 90 because it indicates the use HIIS3 as the selectable marker/gene;

(g) Claim 42 of the '042 patent makes obvious claims 91 and 92 because it indicates the use of a library of peptides in the cells;



Art Unit: 1636

(h) Claim 41 of the '042 patent makes obvious instant claim 93 because it indicates the use of *S. cerevisiae* cells.

In conclusion, although the rejected claims are not identical in scope to the indicated claims of the '042 patent, the claims are indeed obvious in view of each other given the definition of the term "modulator" as set forth in the '042 patent. The term "modulator" includes "antagonists" and "agonists," thus it would be obvious to use antagonists and agonists in the claims of the '042 patent. Because it would be obvious to use antagonists and agonists in the claims of the '042 patent, the instant claims are not patentably distinct from the claims of the '042 patent.

Claims 44-47, 57, 62, 69, 71, 77, 79, 96, 97, 100 and 101 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 45, 46, 48-50 and 52 of copending Application No. 09/581,861 (henceforth the '861 application). **This is a new rejection that is not necessitated by amendment.**

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

1. Claims 45, 46, 48-50 and 52 of the '861 application disclose recombinant yeast cells comprising a heterologous G protein-coupled receptor (i.e., a pheromone receptor), a chimeric G-protein having at least the last four C-terminal amino acids of the endogenous yeast G-protein (i.e., Gpa1) replaced with a heterologous sequence (i.e., the amino terminal portion is substantially homologous with the yeast G $\alpha$  subunit while the remainder is substantially homologous to the heterologous G $\alpha$  subunit), and a heterologous polypeptide capable of

Art Unit: 1636

modulating (i.e., being an antagonist or agonist for) the receptor. Although the claims do not specifically indicate that the modulator must be either an “agonist” or an “antagonist,” the term modulator comprises both of these terms (see for example page 19, line 9-27 of the ‘861 application). Therefore, it would be obvious to use an “agonist” or an “antagonist” in the cells of the ‘861 application, making claims 44-47, 96, 97, 100 and 101 obvious.

2. Claims 46, 48 and 50 of the ‘861 application disclose the use of a reporter construct that is responsive to the pheromone response pathway. Because claim 57 of the instant application is dependent on claims that are obvious in view of claims 46, 48 or 50, claim 57 is also obvious in view of these claims and the ‘861 application.

3. Claims 49 and 52 of the ‘861 application disclose the screening of a library of heterologous peptides as modulators of the receptor. Because claims 62, 69, 71, 77 and 79 dependent on claims that are obvious in view of claims 49 or 52, these claims are also obvious in view of these claims and the ‘861 application.

In conclusion, although the rejected claims are not identical in scope to the indicated claims of the ‘861 application, the claims are indeed obvious in view of each other given the definition of the term “modulator” as set forth in the ‘861 application. The term “modulator” includes “antagonists” and “agonists,” thus it would be obvious to use antagonists and agonists in the claims of the ‘861 application. Because it would be obvious to use antagonists and agonists in the claims of the ‘861 application, the instant claims are not patentably distinct from the claims of the ‘861 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

*Allowable Subject Matter*

Claims 67, 68, 94, 95, 98 and 99 are allowed.

Claims 53 and 102 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Lambertson whose telephone number is (571) 272-0771. The examiner can normally be reached on 6:30am to 4pm, Mon.-Fri., first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel, Ph.D. can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David A. Lambertson, Ph.D.  
AU 1636

  
JAMES KETTER  
PRIMARY EXAMINER